

TETRA TECH INFORMATION SYSTEMS DELIVERY FRAMEWORK

BUSINESS CASE ANALYSIS

(DRAFT)

Department of Homeland Security Environmental Sustainability Information System



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Executive Summary

Tetra Tech is pleased to prepare this Business Case Analysis (BCA) for the Department of Homeland Security (DHS) in support of its goal to implement an Environmental Sustainability Information System (ESIS) that will enhance sustainability and improve environmental compliance. Following is a high-level summary of the key aspects of the Business Case.

1 Issue

The creation of the Department of Homeland Security has led to a large transformation that has involved the consolidation of twenty-two (22) previously disparate government agencies into one department charged with the responsibility of protecting the domestic homeland against foreign and domestic threats. As a result of this process, DHS has assumed environmental oversight responsibility for the following component organizations (Components):

- Citizenship and Immigration Services (CIS)
- United States Coast Guard (USCG)
- Customs and Border Protection (CBP)
- Federal Emergency Management Agency (FEMA)
- Federal Law Enforcement Center (FLETC)
- Immigration and Customs Enforcement (ICE)
- Secret Service (US SS)
- Science and Technology (S&T)
- Transportation Security Administration (TSA)
- US VISIT

Following the consolidation, DHS is seeking to develop and implement an ESIS that will enhance its sustainability efforts and give its components the tools required to assure environmental compliance. To justify the investment in an enterprise ESIS a Business Case needed to be prepared.

Tetra Tech has been contracted by the Department to assist with the preparation of a BCA. In developing the report, Tetra Tech's team met with key component stakeholders to gather real world information required to support a thorough Business Case Analysis for the proposed ESIS.

In addition to meeting key stakeholders, the Tetra Tech team also met with key component Subject Matter Experts (SMEs) who provided key insights into the challenges presented by day-to-day environmental management at the HQ level and also out in the field at the operational level.

Within DHS's mandate to protect the homeland there is the important overarching need to protect the communities and the natural environment that are affected by each of the component's activities. In looking into ways to better manage sustainability and environmental compliance, DHS is looking to implement an enterprise system to help components to better manage sustainability and compliance with environmental laws and regulations.

The DHS components currently use a variety of software tools and manual (paper-based) systems to manage environmental compliance and sustainability. While these tools address various compliance functions, there is no comprehensive system within the components or DHS-wide that provides a comprehensive system using web-based technologies that provides the numerous benefits of standardization and efficiency provided by an enterprise system. This business case articulates the many benefits that can be derived from a centralized ESIS that gives the Department and its components important tools to assist with sustainability and environmental compliance.

Implementing an enterprise system of this scope has its unique challenges. An important requirement for the proposed ESIS, for example, is that the solution meets the needs and requirements of complex and mature environmental programs that are usually large in size (the U.S. Coast Guard provides a good example). The proposed ESIS also needs to provide tools that are easily useable by organizations with environmental programs that are smaller in size (CIS and US VISIT are good examples) or organizations that are still standing up their full environmental compliance programs (FEMA).

This Business Case will provide the decision-making framework needed for the potential ESIS that will meet the needs of the components. This document will also serve to guide subsequent actions that include Implementation Plan Development and Funding Requests (E.g. OMB 300 Exhibit documentation).

This Business Case fits into the Information Technology (IT) Systems Development Process-Flow Framework below:

Step	1	2	3	4	5	6
Phase	Business Case and Implementation Plan	Design/Build or Procure ESIS		Test	Release and Deploy	Support and Maintain

The effort undertaken by this Business Case represents Step 1 (above).

The major effort associated with this task order involved interviews with key DHS component stakeholders and subject matter experts, who were asked a series of questions about how they manage sustainability and environmental compliance. Some of the areas covered includes: how do components manage Hazardous Materials, Hazardous Waste, ISO 14001 EMS, Tanks, Compliance Auditing, Asbestos, Greenhouse Gases, etc.

The interview process also sought to determine what software tools, if any, are currently being used to assist with managing environmental compliance and sustainability.

In a previous study commissioned by DHS in 2006, a number of Government-Owned and Commercial-Off-the-Shelf (COTS) software applications were evaluated for possible use by DHS to serve as the technology solution for the ESIS (ESIS Recommendation Report – January 10, 2006). Several software applications were considered and two commercial tools made the final short-list:

- Intelix
- Essential Technologies

The Department, however, did not push forward with the proposed COTS Intelix. At the time, the proposed solution appeared to be cost prohibitive. The implementation costs projected over an 8 year period exceeded \$9.5 million. There were also concerns that the proposed solution would not be adequate to support DHS's broad environmental compliance and sustainability requirements. Intelix software, at the time, focused heavily on EMS (in addition to safety and occupational health) but did not include extensive capabilities to help the components manage compliance areas such as Hazardous Materials Management, Tanks, Hazardous Waste Management, Asbestos, Cultural Resources, etc.

In preparing this report, a determination has been made by the Tetra Tech team to look at and propose the 'Best of Class' software capabilities that are currently in successful use by large federal or commercial organizations.

Consideration is also given to successfully used tools and capabilities currently in use within the Department and its components.

As part of this BCA, a determination will be made as to whether the proposed software solution that provides the backbone of the ESIS will be hosted inside of DHS (within the DHS network and internal firewall) or externally hosted in an Application Service Provider (ASP) type arrangement and accessed by users using an Internet Browser.

In specific terms, this BCA evaluates the following four alternatives as possible ESIS deployment scenarios.

Alternative 1	Maintain the Status Quo (Baseline). DHS components use their own tools to support compliance and sustainability with a mix of technologies used, such as: Microsoft Word, Excel, Access, Outlook, SharePoint and a mixture of disparate web-based software tools (CP-Track, Fed Center, etc.)
Alternative 2	Implement an ESIS, Not Centrally Funded
Alternative 3	Implement an ESIS, Centrally Funded and Hosted Externally (at a commercially operated data center)

Alternative 4	Implement an ESIS, Centrally Funded and Hosted on a DHS Server
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2 Anticipated Outcome

The anticipated outcome of this BCA is a recommended approach for DHS to use going forward with its goal to implement some kind of an ESIS.

3 Recommendation

This Business Case Report recommends the implementation of an ESIS Centrally Funded and Hosted on a DHS Server.

DHS plans to implement an ESIS using Alternative 4 which will give the Department a comprehensive, centralized software solution for supporting sustainability and managing environmental compliance.

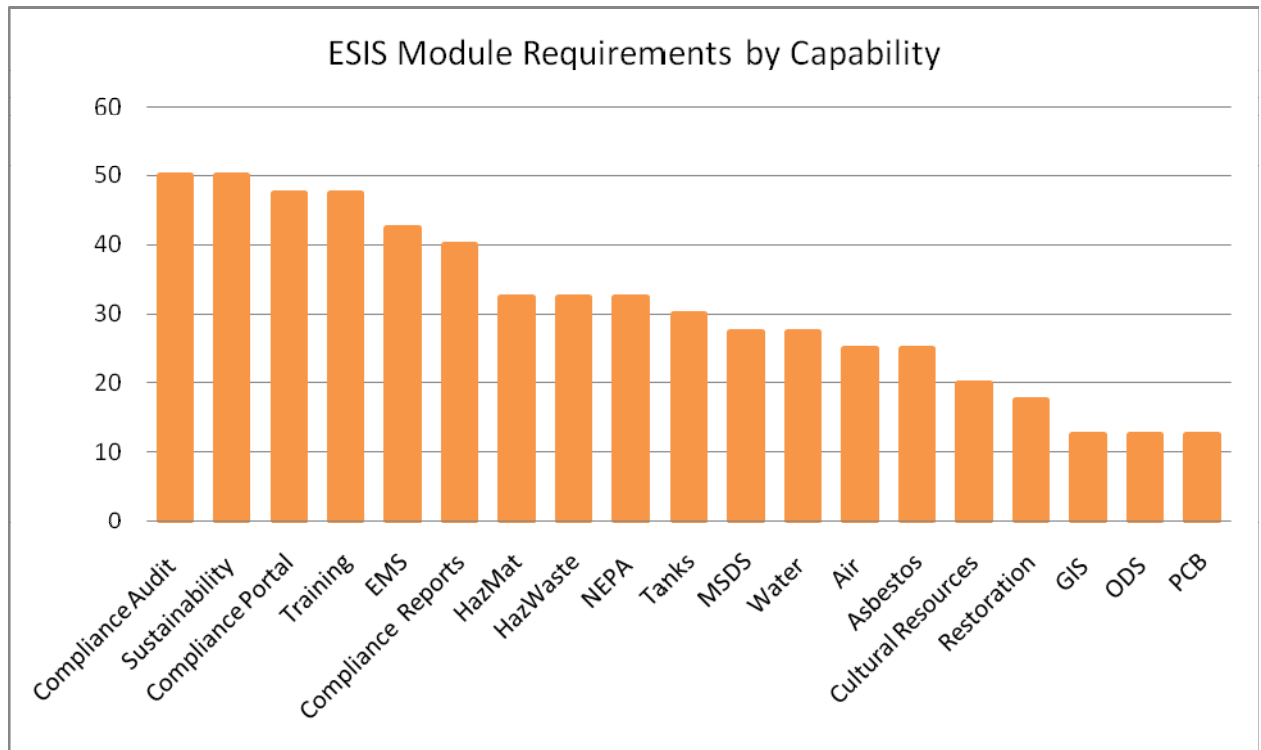
Following DHS stakeholder and subject matter expert discussions, a number of proposed tools are recommended for inclusion in the ESIS that will provided the components and DHS HQ with toolsets to help assure a high-level compliance with environmental requirements and also support the department with its sustainability goals and initiatives.

In providing a comprehensive tool for the all the components to use, following is a listing of primary tools that will be provided under the umbrella of the ESIS:

- Sustainability
- ISO 14001 EMS
- Compliance Portal
- Hazardous Materials
- Hazardous Waste
- Tanks
- Asbestos
- Cultural Resources
- Environmental Training
- Environmental Compliance Auditing
- Greenhouse Gas Emissions Tracking
- Air Compliance
- Water Compliance

- PCB
- ODS

Following the stakeholder and subject matter interviews with the components, a priority ranking of tools was created and is presented below.



It should be noted that some of the tools offered for use by the components would require mandatory use (E.g. Sustainability and ISO 14001 EMS) while others tools would be made available for use on an *a la carte* basis, based on perceived utility by the each of the components.

The recommended ESIS implementation solution (ESIS centrally funded and hosted on a DHS server(s)) is in alignment with twenty (20) benefits outlined in the Justification section below.

4 Justification

An ESIS centrally funded and hosted by DHS provides the following advantages:

1. Improves environmental compliance assurance with laws and requirements. A total of sixteen (16) environmental compliance and sustainability-focused tools will be made available to the components.

The ESIS will provide one system to help manage environmental compliance that will lead to reduced risk from errors and omissions when generating required compliance reports.

Using one system with a broad number of compliance tools will facilitate the documentation of compliance and prove due diligence to federal, state and local regulators. A good example will be the use of the Chemical Assurance Matrix in the Hazardous Materials Module which will run through all the chemicals used at a facility or organization and find out which ones trigger various regulatory compliance threshold exceedences. This feature is critical in helping organizations avoid costly fines from regulators.

Users of the ESIS will have the confidence that they are using the most current information or at a minimum will know when a document or piece of data was last modified or updated.

The software will provide simple tools to make sure that required regulatory reports are always up to date. The software will also make responsible persons are made aware through email notifications that a compliance report is due.

2. Improves the management of established sustainability goals. The sustainability module will give DHS the ability to track and report overall environmental performance metrics. Sustainability goals are best tracked when the metrics are transparent and are regularly tracked.
3. A single ESIS will provide a standardized interface for data collection that will lead to consistent outputs. When adding tank information as part of the SPCC compliance management process, for example, all components will add all the key information needed in an identical format. The resulting outputs will be a consistent report format that has all the primary information available for use or viewing by interested parties.
4. Cost Savings – Through economies of scale, cost benefits may be derived from procuring software as a large group than individually. With the single, centralized ESIS there will be the opportunity to eliminate multiple systems that do the same thing. There are many instances where each component manages certain aspects of compliance using similar, but slightly different tools. The problem with this approach is that the cumulative cost of using these different tools is not always recognized when you look at the total cost of compliance which would include IT maintenance, individual software licenses and hardware costs. It should be recognized that even basic desktop software applications can have a costly footprint in a large organization setting.
5. A centrally funded ESIS provides DHS with the ability to incorporate the 'best of class' software features and capabilities that are in use within the federal government, private sector and also within the Department. DHS can go out and use its larger resources to pick and procure the best software solutions in the market place (inside or outside government). DHS can also fund the development of an ideal software solution using internal IT support or use a contractor following a focused requirements analysis/systems specifications process.

6. When purchasing software in large numbers, bigger discounts can be obtained on license fees from volume purchases. Licensing arrangements can also be bulk quoted. If DHS decides to design its own system, however, there would be no per user fees.
7. High information security assurance. An ESIS hosted inside DHS provides the highest level of security. Externally hosted software would lead to key DHS work products hosted outside its protective networks and therefore have the potential for major security vulnerabilities. The alternative recommended selects a centrally funded ESIS hosted inside DHS's network which is the securest solution of the four alternatives.
8. A robust ESIS allows for a simplified way to access real-time information that can be summarized or rolled up in a variety of ways to support high level decision making or to track the performance of established Key Performance Indicators – KPIs. The ability to conduct self-service report generation that aggregates data from multiple sources would decrease the number of requests for information from DHS HQ to the components. Because one database is in use, DHS HQ will have the ability to quickly accessing key component data and information.
9. Using the power of web-enabled technology, the ESIS provides for the ability to easily share and broaden access to environmental compliance and sustainability management information. Web-based in the context of the solution recommended for the DHS ESIS only refers to the technologies used to communicate with the underlying database. Users will use a web-browser to access the DHS ESIS database, but they will only be able to do this while logged into DHS's network. Access from the Internet will be restricted or blocked entirely

The software will also incorporate a dashboard portal homepage that software users can use to customize or personalize their interface with the system based on their needs and organization levels. If a headquarter user is interested in looking at Sustainability charts, for example, the user can select that specific portal (which is a small boxed window of functionality) with that information to show on his/her home page. If a user is only interested in tracking hazardous materials and hazardous waste, the user can select those portals to appear on his/her page. In some instances, the software will know what role a user plays in the organization and present a desktop with appropriate menus and links that the user will be able to customize.

10. Since the software will be centrally hosted within DHSs network, the ability to integrate with existing DHS systems like email (Microsoft Outlook) will be possible. The software, for example, will be able to easily email notifications and ticklers to users that would be accessed by the mailing systems they use on a daily basis. The software will also allow users to delegate tasks and track accountability. There are many instances within the component organizations where environmental management, particularly at field operations or outlying stations, is an ancillary duty. So the ability to task these individuals

and electronically check that certain aspects of compliance have been done will be a major advantage.

Since the software will be hosted inside DHS, there may be the opportunity to also connect with and share data with existing DHS legacy systems or other enterprise applications currently in use to support non-environmental functions but that do have useful data to support environmental sustainability and compliance.

11. The specifications for the ESIS will be compatible with current DHS architecture and database requirements (.NET Framework, JSP and Oracle 9 or 10g database)
12. A centrally funded ESIS will provide simple, but effective tools to assist small organizations with non-dedicated environmental staff to better manage environmental compliance with key compliance requirements. The use of the electronic Annual Compliance Planner and Environmental Guides will provide these organizations with important tools to stay in compliance.

The compliance planner is essentially a dynamic listing of high level compliance requirements (E.g. permit due dates, reporting dates, and inspection actions scheduled)

The features of the Compliance Planner are also important in sustaining institutional knowledge, particularly in organizations where personnel turnover is high. In using these tools, a user assuming new environmental management responsibilities, for example, will have good information about how his/her predecessor managed compliance and sustainability on an annual basis.

13. The implementation of a robust ESIS will minimize organizational environmental risks by giving the component organizations and DHS HQ a better grasp of potential liabilities and associated compliance challenges. In using an ESIS with information stored in a single database, DHS and component organizations will have a complete and current inventory of all assets that might impact the environment, e.g. regulated tanks, asbestos, or cultural resources.
14. Advantages of one database. This capability allows component operations using the same types of information to enter it once. If a facility within one of the components uses a particular chemical that is commonly used at other organizations within the component, they can share the information and have it entered once. An example of this capability would be the Hazardous Materials MSDS module where there is only a need to enter an MSDS for 'WD-40' once, instead of multiple times.
15. The centrally hosted ESIS will improve access and sharing of 'Best Practices' across DHS components. Where one DHS component is doing an outstanding job managing a certain area of compliance or sustainability, this information can be quickly shared with other components. This sharing enhances environmental awareness, teamwork and

personnel involvement. Using an ESIS allows for significant opportunities for improvement can be identified and quickly shared across the DHS enterprise.

The centralized portal will also provide a place for DHS and Department components to post and maintain Department-wide policies and procedures that are standardized and appropriately controlled.

16. The centrally hosted ESIS will provide enhanced compliance oversight from the headquarters level. Using the Compliance Audit Module, DHS-HQ, for example, can instantly find out where all the high risk compliance findings and what their resolution and closure status is.
17. The implementation of an Enterprise ESIS will provide major advantages over using desktop tools. The use of desk top tools may be useful and in many cases have good utility, but they have a major limitation in being inaccessible to a large number of people. An environmental department at headquarters may not have an efficient way of sharing key information with the field that can assist them with compliance.
18. Implementation of an ESIS will significantly improve the speed in getting access to information. On-Demand access to the software will mean that that there will be a reduced need slow physical mail or even emails to multiple sources for the same thing.
19. Software changes in a web-based ESIS (versus) a desktop focused system can be made available across the enterprise instantaneously or overnight. Desktop updates to hundreds of system can be a nightmare, even if they can be pushed out over the network.
20. Software quality assurance is also standardized across the enterprise when using one system.

5 Assumptions

There are a number of assumptions included in the writing of this report. They include:

- The proposed solution assumes that the proposed ESIS will be centrally funded and that dedicated funding will be made available for a period of several years it takes to design, build, test, deploy and maintain the system.
- The success of the proposed solution also depends on policy guidance on the use of the various tools offered. Policy documentation signed by top management may be needed to establish what tools might be mandatory and what may be optionally used by the components.

6 Limitations

Limitations identified include:

- Recurrent annual funding by DHS HQ will be needed to maintain the ESIS. The ESIS assumes a multi-year commitment of funding to support successful implementation and ongoing maintenance (database servers, help desk, etc.)
- Implementation scheduling could be a challenge because DHS is a large organization with component facilities located at over several hundred facilities across the United States.

DOCUMENT REVISION HISTORY

Version	Date	Name	Description
Initial	2/22/2010	Draft Report Issued	Initial delivery of Draft Report

Section 1. Introduction and Overview

Tetra Tech is pleased to prepare this Business Case Analysis (BCA) for the Department of Homeland Security (DHS) in support of its goal to implement an Environmental Sustainability Information System (ESIS) that will enhance sustainability and improve environmental compliance.

Preparing a Business Case Report is a critical phase in a proposed software implementation project's lifecycle. The BCA provides the basis upon which proposed IT-related investments are justified and initiated. This BCA will provide the supporting documentation needed for the OMB Exhibit 300 that will be used to obtain Program Authorization to move forward with the process of implementing an ESIS.

This Business Case Report recommends the implementation of an ESIS that will be hosted inside DHS and centrally funded by DHS. The proposed ESIS will be made available to all DHS components to assist them with the management of sustainability goals and environmental compliance.

Most of the DHS components have headquarters operations based in Washington, D.C. that primarily conduct primary management and administrative tasks. Most of the components also have extensive field operations whose work is national in scope (for example: Coast Guard Stations located in coastal areas around the country, TSA field operations in airports around the country, or Border Patrol Posts located along the Mexican and Canadian Borders).

In its implemented form, the ESIS will meet the requirements of the headquarter operation users in addition to the needs presented by field operation users located around the country. In making this possible, it is expected that the software interface will be intuitive to present different dashboards for the different groups of people. The proposed software will show an appropriate level of functionality for the user's requirements that is dependent on a user's functional roles.

The management systems implementation will also take into account the varying degrees of environmental management maturity. Some organizations are relatively new in operation and have newly established environmental compliance programs (like US VISIT). Others have mature environmental programs, like the United States Coast Guard.

In preparing this business case, Tetra Tech, Inc. interviewed the primary stakeholders from all the DHS components. Also in attendance at some of the meetings were subject matter experts who deal with day-to-day environmental operations. The organizations interviewed with their primary POCs are listed below:

Organization		Primary Interviewee
DHS	Department of Homeland Security	Robert (Dennis) McMenamin
CIS	Citizenship and Immigration Services	Jolene Vallone
CG	Coast Guard (USCG)	Ed Wandelt
CBP	Customs and Border Protection	Brendan Deyo
FEMA	Federal Emergency Management Agency	Charles Goyette
FLETC	Federal Law Enforcement Training Center	Willis Hunter
ICE	Immigration and Customs Enforcement	Joseph Gerhart
S&T	Science and Technology	Ian Rosenblum
TSA	Transportation Security Administration	Andrew Bouie
USSS	Secret Service	Dennis Pennett
US VISIT	US VISIT	Susan Hathaway

In addition to the site visits, Tetra Tech conducted web interviews with representatives from other federal services who use enterprise systems like the U.S. Navy and Air Force. Appendix 2 of this BCA lists the systems reviewed.

1.1 Background

The DHS components currently use a variety of tools to assist with environmental sustainability and compliance management. They include desktop software products (like Microsoft Word, Excel, Access, and SharePoint). A good amount of manual (paper-based) systems are also used.

There are also web-applications in use that are more focused on specific areas (e.g. CP-Track for auditing or the NEPA application managed by DHS-HQ). While these systems address various compliance-focused environmental compliance functions, there is no integrated system within the components or across DHS that addresses a comprehensive enterprise system that provides the benefits of standardization and efficiency across the department.

One system that comes close to the goal of presenting an integrated system that manages several compliance programs and ISO 14001 EMS is the EnviroManager Software used by the United States Coast Guard.

This Business Case provides the decision-making framework needed for the potential implementation of an enterprise DHS-wide ESIS hosted inside the department.

This Business Case will use a gap analysis to present the ideal outcome (End State) of an implemented DHS-wide ESIS and contrast it with the current “As Is” situation.

1.2 Purpose

The purpose of this Business Case Analysis is to provide DHS with expert recommendations for the creation, implementation and maintenance of an enterprise DHS-wide ESIS.

1.3 Scope

DHS desires to put in place a software solution that supports environmental sustainability, compliance management, compliance assurance, ISO 14001 EMS implementation and risk management. The proposed solution may include capabilities for financial management, budget tracking and extensive report generation capabilities.

Since DHS components vary in size and also in complexity of operation, the proposed ESIS should meet the needs of large organizations and also the needs of smaller organizations. The implementation of the ESIS should also provide for the efficient incorporation of EMSs that are mature with those that are still in their early stages of development.

1.4 Methodology

The Tetra Tech team used the Microsoft Rapid Economic Justification (REJ) methodology to write this business case and identify the best alternative to suit DHS's ESIS implementation needs.

REJ is one the newest frameworks available within the IT world. It is used to build business cases that are oriented towards the decision makers of organizations. In a nutshell, REJ consists of the set of tools and processes for comparing and matching potential new IT projects with customer goals and expectations. REJ also incorporates standard management approaches like the Balanced Scorecard and Six Sigma with the goal of presenting a holistic case to justify IT investments.

The reader of this report should note, however, that although REJ concepts are used widely in this report, the authors of this report used the suggested document structure (template) that was provided to DHS and that is also outlined in the Scope of Work.

In developing the Business Case Analysis, the contractor (Tetra Tech, Inc.) made data and information collection trips to each component. As part of this process, interview checklists were used to establish how environmental compliance functions are managed around key media areas such as tanks, hazardous materials, EMS, sustainability, etc. The interviews also sought to establish how, if any, different software tools are used to assist with compliance management, compliance assurance and sustainability.

The results from this checklist were put into matrix that indicates a potential level of need for each software capability. The information was then summarized numerically and is presented in the graph below which highlights the highest to the lowest needs. More information about this process is included in Appendix 4.

It should be noted that the evaluation team purposely stayed away from a complicated methodology in conducting this assessment. The grading levels used to prioritize each tool used

“Mid-to-High-Need” to “No-to-Low Need”. The rationale behind the broad choice ranges is that needs change. For example, some software capability needs do not exist currently but may exist in the near future. For others there is a high current need (to manage NEPA actions at a large property) that will be lessened significantly in the future (following the sale of the property).

In reviewing the four alternatives for implementation, the selected solution takes into account the primary factors of cost, risk and capability.

An analysis of project costs is provided using three scenarios (2010 proposal; 2006 proposal; and maintaining the status quo – i.e. no implementation of an ESIS). In this analysis, the costs for designing, programming, training, hardware procurement/lease, operations and maintenance are included, along with personnel support requirements.

In proposing the alternative for DHS to pursue, the contractor also looked at the pros and cons of other federally implemented enterprise systems (e.g. Air Force EESOHMIS) to identify the positive lessons learned and also the pitfalls encountered that should be avoided.

1.5 Tetra Tech, Inc. (Business Case Authors)

Successfully managing large federal information system programs requires experience, skill and quality support. Tetra Tech has provided large and small organizations within the federal government with a complete set of Information Technology services centered on management systems development, implementation and maintenance. Tetra Tech is also a leading provider of EMS consulting support to the military and to a large number of private organizations.

Working collaboratively with our federal partners, Tetra Tech brings the qualified people, technical expertise, capabilities and resources required to successfully support their goals at any point an information systems development life cycle.

1.6 Business Case Analysis Team

For this Business Case Analysis, Tetra Tech employed a balanced team of personnel to support this project, reflecting the need for team members who have a strong environmental sustainability and compliance background, in addition to a strong Enterprise IT background.

Section 2. Current State Assessment and Future Vision

The following narrative describes the DHS current state assessment and future DHS vision for a planned enterprise ESIS.

2.1 Current State

2.11 Current State Operations

DHS components currently use a variety of software tools to help them manage sustainability and environmental compliance. There is the use of standard Microsoft Office products like Word, Excel and Access. Some components are also using Microsoft SharePoint for document management and basic list building tasks. Manual paper-based systems are also extensively used. Several components use a variety of web-based applications to support environmental compliance such as CP-Track used for environmental compliance auditing and the NEPA software used by DHS HQ.

If there are large web-based tools in operation, they are typically deployed to meet a specific need, like the NEPA tool used by DHS HQ.

At the present time there is no centralized database in use at DHS that supports the broad sustainability and environmental compliance needs for all the components. The tool that comes close to this goal that is used by the Coast Guard is EnviroManager Software.

2.12 Accountability and Standards

The management of sustainability and environmental compliance is driven by a number of regulations and requirements. Chief among them with several years since promulgation include the following:

- Clean Air Act (1972)
- Discharge Monitoring Reports (1985)
- Hazard and Solid Waste Amendments (1984)
- Waste Manifests (1980)
- Biennial Reporting (1983)
- Emergency Planning and Community Right to Know (EPCRA and SARA) (1986)
- Hazardous Chemical Inventory (1987)
- Toxic Chemical Release Reporting (1988)
- Clean Water Act Amendments (1990)
- MACT Compliance (2003)
- NSR and PSD Permitting (1975)

There are also other requirements such as Presidential Executive Orders that required appropriate federal agencies to implement EMS based on the ISO 14001 International Standard.

Based on these and other requirements, there is a need for software tools to assist in the compliance with the applicable laws and regulations. A good example of this need is the challenge in preparing compliance reports using data from multiple systems that is provided in multiple formats. One integrated system minimizes mistakes and inconsistent reporting. It also allows for easier rollup of data from multiple sources.

2.13 Best Practices and Shortcomings:

Within the DHS components, there is the existence of organizations that have mature environmental programs with established best practices used to improve sustainability and maintain environmental compliance. On the other hand there are also programs that have recently been stood up. The availability of these types of practices can be very useful to other entities that have similar operations and processes. An integrated web-based system would allow these positive experiences or BMPs to be shared with other components.

Conversely there are specific areas of challenge that some organizations have faced that would benefit from a shared repository of information about how the challenges were met.

From a basic standpoint there are also situations where components do not know what assets they have. A common unanswered question during the site interviews, for example, was how many regulated tanks do you have? Several components were not sure if they had a full and accurate count. If an enterprise ESIS were in use, this information would be available in seconds.

The information could also be provided on a self-serve basis allowing the requester to access the software on demand when needed.

2.14 Current State Review

The creation of DHS has lead to the consolidation and integration of twenty-two (22) previously disparate organizations. As a result, a coordinated oversight of environmental compliance is a challenge using the current setup that primarily uses desktop tools or highly specific applications to manage environmental compliance and sustainability.

2.2 DHS Future Vision

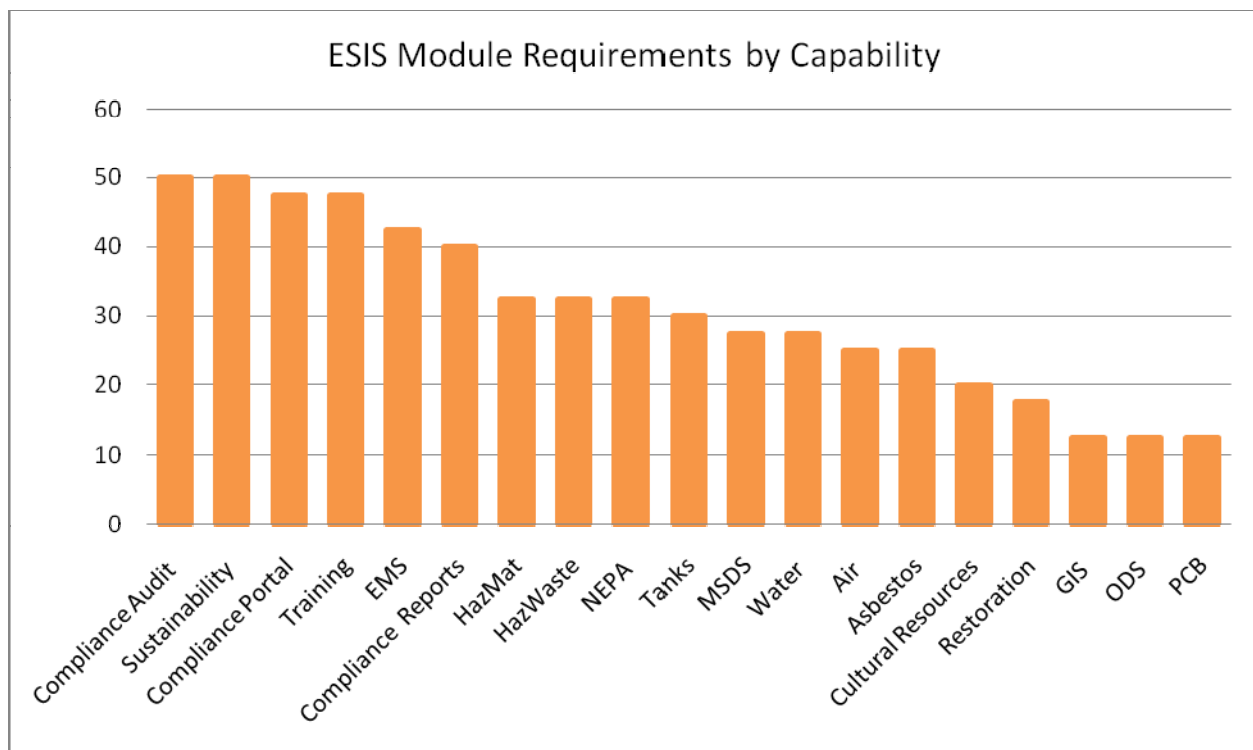
2.21 ESIS Requirements

An integrated ESIS with a comprehensive set of tools would provide significant benefits to the current state and serve to improve sustainability and environmental performance.

The primary ESIS requirements that will benefit the component stakeholders and users of the software will be met by a number of proposed software tools to be developed or provided with customizable components from a software vendor. It should be noted that the use of these tools are primarily driven by environmental regulations that require a certain amount of information (documentation and data) to be accurately recorded and maintained to prove compliance.

The benefits defined by each of the tool's features described below provide several Critical Success Factors (CSFs) that will be made available to the users of the software.

During the DHS component interviews, the needs for specific tools were graded. Summarized below using a priority need ranking are the results from the Software Needs Analysis. Tools with the highest scores have a greater demand from the components than tools with the lower scores. The maximum score attainable for each compliance category is 60.



The ESIS will provide the following tools and associated summarized features and benefits. A summary of the capabilities for each of the tools listed above are provided below:

- **Sustainability Portal and Best Practices Repository** – The portal will be used to track and manage high-level Sustainability Metrics (many of which are currently being tracked by the DHS Environmental Scorecard and associated data-calls). Because one integrated system will be in use, it will be simple to routinely query and aggregate sustainability data by component, location, region or entire enterprise and generate useful results for top management.

This module will also be used to manage a standardized set of work-processes around Data Calls. It is not the DHS's intention to control the tactical environmental operations of its components. DHS HQ, however, does want to conduct an appropriate amount of oversight to assure a high level of environmental performance for the Department and to minimize environmental risks that are a result of DHS operations. An ESIS with a web-based score card with drill-down capabilities will improve the data call management process.

The Sustainability Portal will include a reports generator that will help the Department to gather environmental sustainability and compliance information from across the enterprise. DHS HQ or a Component HQ will be able to query the ESIS database for a listing of permits and requirements for each sub-organization. From a planning and budgeting perspective the ability to gather information and assess high priority needs will be a major enhancement provided by the ESIS.

The Best Practices Repository within this module will also provide a tool for components to post and view best practices (E.g. DHS Management Directives, Component BMPs and Facility SOPs). This area will provide an area for environmental managers to obtain resources information, contacts, best practices, guidance documents, etc. This module will also include a reports generator provided for use by headquarters to obtain key metrics from the components.

- **ISO 14001-based Environmental Management System (EMS)** – This module will be used to implement and manage ISO-conformant EMSs. All appropriate federal organizations are required to have EMSs per Executive Order 13423 and

this application will provide a repository for all component organizations to store their EMS work products that will need to be audited on an annual basis.

Users who use this tool will be able to self-declare full EMS conformance to the Executive Order requirements. Component EMS work products in the software will provide auditors with a central location to review full implementation of an ISO 14001-conformant EMS.

The software will also be used to help components maintain their management systems and help them to achieve the continuous improvement results that are the outcome of well managed and maintained EMSs.

- **Compliance Auditing** – this module will be used to manage compliance audits. The software will be used to schedule, manage checklists, record findings, resolve findings, and manage compliance resolution status reports.

NOVs and fines information may also be recorded in this module. DHS HQ may query the database for high risk findings. DHS and Component HQs would also be able to track how quickly findings are resolved and closed.

- **Compliance Requirements Portal and Guide Management** – this module will be used to list high level annual compliance requirements and associated tasks.

The compliance requirements portal is typically used by facility-level organizations in providing them with an annual planner that will allow users to make sure that their required regulatory reports are always up to date and that event-driven compliance actions are carried out when they are supposed to be done.

The module will also have a document management capability to store compliance documentation (E.g. Management Plans, Standard Operating Procedures) and records (permits and key correspondence demonstrating compliance).

This module will also include a feature used by the Coast Guard called Unit Environmental Guides. UEGs are a way to document what compliance requirements need to be followed on a day-to-day basis. These guides also work as Turnover Books, which can be used by replacements when a person with primary environmental responsibilities moves on. In summary, guide management, refers to summary compliance guidance documents used primarily

by smaller organizations to highlight key annual tasks needed to maintain compliance (larger organizations tend to use a number of management plans.)

This module also includes tasking capabilities with email notifications and reminders that can be posted into Microsoft Outlook's email and calendar. The task management features will allow managers to track and monitor completion of compliance-related tasks.

In summary, this module will users document their complete compliance history by capturing completion status and associated documentation and notes needed to maintain compliance.

- **Tanks Management** – This module will be used to manage key information about regulated USTs and ASTs that are included in SPCC plans. Information in this module includes tank characteristics, protection features, operational controls, tank contents and volume, and closure information (if applicable).
- **Cultural and Historical Resources Management** – this module will be used to inventory and manage all Cultural and Historical Resources that require CATEXs. This module will include site information, pictures and notes on correspondence with SHPOs and other regulatory personnel.
- **Asbestos Management** – This module will be used to capture high level Asbestos survey information and provide O&M tracking tools. The software will record the location of susceptible or actual asbestos, survey results. This software will also help the components with asbestos-related Operations and Maintenance (O&M) activities but also for general work-related safety.
- **Hazardous Materials Management** – This module will be used to manage hazardous material characteristics, storage locations and amounts for component organizations that require EPCRA Tier II and TRI reporting. The software will help components to accurately generate SARA Title III reports. The software will easily track pure and mixed chemicals and provide detailed reports on where hazardous materials are.

This module provides a good example of how generating data for compliance purposes from one system is far more efficient (time and cost) than pulling the information from multiple systems and sources. This approach is also fraught with compliance risks from missed information or information that is poor in quality or reliability.

This module comes with an MSDS management capability which will also serve to satisfy the OSHA Hazard Communication Standard. MSDSs are also the source of hazardous chemical constituent information that is primary compliance-related inputs to the module.

The software can also be used to manage Authorized Use Lists (AULs) which acts to control the use and acquisition of hazardous materials and support pollution prevention initiatives.

Streamlining the use of MSDSs will save time and money, in addition to providing the most current environmental compliance and safety data. The ESIS will provide the ability to access MSDSs easily from remote locations.

This module will also include a Compliance Assurance section which compares the chemicals used at a facility or organization and compares it to various threshold lists. See Appendix 5 for a brief write up about the key benefits provided by the Compliance Assurance Matrix section of this module.

- **Hazardous Waste Management** – This module will be used to document RCRA-managed waste at component organizations that dispose more than 500 pounds of this waste. The software will also standardize waste characterizations across the enterprise; track waste streams from cradle to grave; simplify manifest and DD1438 creation; and simplify TSD facility tracking.

The software also helps organizations manage the time constraints imposed on hazardous waste storage.

- **Environmental Compliance Training Management** – Traditional classroom learning can be very expensive (requires trainers, training buildings, materials, etc. The WebTrainer module provides a tool to present and manage training that can be appropriately taken online. This module will host up to 30 primary Environmental Training Modules that can be customized by components. The software will allow for the documentation of all environmental compliance training and because it is web-based will reduce training costs. The training will also be particularly effective for components where personnel turnover can be high (e.g. uniformed service men and women in the Coast Guard get rotated very often and serve on short tours of duty).

If used by components, Training reminders and reports to managers will ensure that employees or personnel working at component organizations receive appropriate training before starting a new job or on a refresher basis.

- **Air Management** – This module will be used to assist component organizations that have Title V air requirements. The module will be initially used to list all permitted emission sources. The module will also track completion of permit-driven tasks.
- **Water Management** – This module will be used by component organizations that maintain NPDES or SPDES permits. The module will also track completion of permit-driven tasks.
- **Green House Gas Emissions** – This module will be used by organizations wishing to establish and track their green house gas footprint and support required regulatory GHG accounting, recordkeeping and verification requirements. The Environmental Protection Agency (EPA) recently released the EPA Rule on Greenhouse Gases which requires a large number of organizations to inventory their GHG emissions sources and report Carbon Equivalent totals.
- **GIS** – This lightweight GIS module will allow components to use the basic web-based GIS module providing a map-based portal to quickly access environmental risks, assets and much more.

The ranked listing of software tools will form the basis of a prioritized listing of modules to be implemented.

The next step would be to make sure that the capabilities within the tools meet DHS's sustainability and environmental compliance requirements. It is assumed that key stakeholders and selected key end-users will be involved in this process and if new business requirements need to be added their input should be considered if the requested features advance the application toolset.

Use of the software modules that are proposed for this ESIS will involve mandatory use by specific components of specific tools if they exceed certain pre-determined regulatory thresholds or who have specific compliance requirements (e.g. maintain a Title V Air Permit). Below is a proposed example of 'mandatory' and 'optional' use of the software modules to be offered within the ESIS.

Tool/Module	Required Use By	Optional Use By
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Sustainability Portal and Best Practices Repository	All Components	
ISO 14001 EMS	All Components that are part of the appropriate facilities list. EMSs may be site-based or organization-based	Other Component Organizations
Triennial Compliance Auditing	All Components	
Compliance Requirements Portal and Guides Management		All Component Organizations
Tank Management	All Component organizations that have regulated USTs and ASTs included in SPCCs	Other Component Organizations
Cultural and Historical Resources Management	All Component organizations that have Cultural or Historical Resources that require going through CATEX process	Other Component Organizations
Hazardous Materials Management	All Component organizations that have EPCRA Tier II and/or TRI reporting requirements	Other Component Organizations
Hazardous Waste Management	All Component organizations with RCRA Waste that are Large Quantity Generators	Other Component Organizations
Air Management	All Component organizations that have Title V Reporting requirements or a SIP state program	Other Component Organizations
Water Management	All Component organizations that have a NPDES or SPDES Permit	Other Component Organizations

Environmental Compliance Training	All Components for specific environmental compliance training	Other Component Organizations
Green House Gas Emissions Management		Available to all Components
PCB Management		Available to all Components
ODS Management		Available to all Components
Web GIS		Available to all Components

2.22 Programmatic

DHS will put in place programmatic requirements to implement and maintain the ESIS. These will include:

1. Providing clear, written policy direction on what modules are required to be used by components and which modules are optional. This guidance should provide a rationalization behind the need to use these tools.
2. DHS committing to funding the ESIS for a number of years A consistent funding stream will be required for successful deployments.

2.23 Management:

DHS will provide overall management for the ESIS that will include:

1. DHS will chair software user group meetings and also facilitate the resolution of component issues and communicates any proposed changes to the software support team.
2. Supporting a contracted support staff of a database and application administrator and a help desk team (1 – to – 2 persons) will be a requirement for a successful

ESIS. These positions may be held by government personnel, contractor staff or a combination of the two.

2.24 Technical:

Technical requirements will include:

1. An Oracle DBA /Application Administrator of 1 FTE (initially). Following year 3 of the deployment this need could be decreased to a half-time FTE.
2. There will also be a dedicated helpdesk of 1 FTEs who will man a help desk during regular business hours.

2.25 Future Vision Review

The development and implementation of an ESIS will provide DHS and its components with a single, centralized, web-accessible repository to manage environmental sustainability and compliance.

Flexibility will be built into the roll-out of the ESIS with some modules being required for use by certain components if they fall within threshold requirements while others will be offered on an *a la carte* basis based on compliance-related need or perceived efficacy.

Section 3. Gap Analysis

3.1 DHS Programmatic Criteria

DHS requires its components to be in compliance with Environmental regulations and requirements at all times. DHS will also require components to participate in Department wide sustainability initiatives. Listed below is a Gap Analysis of what is currently used to support compliance and what the future state might be if an enterprise ESIS is implemented.

Tool/Module	Current Use/Availability	Potential Future State
Sustainability Portal and Best Practices Repository	Emailed Spreadsheets and Word Documents with BMPs	Web-based Access to Sustainability Metrics and BMPs
ISO 14001 EMS	Mixed. Word and Excel docs. Documents stored on SharePoint or	Web-based access to all EMS

	other Documents Management Systems	work products
Compliance Auditing	Mixed. Use of CP-Track. Spreadsheets and Word docs	Web-based access to Environmental Compliance Audits (scheduling, checklists, findings, resolutions)
Compliance Requirements Portal and Guides Management	Mixed. High level requirements may be listed on Excel Spreadsheets. Management guides, SOPs and BMPs are in paper-based and some electronic document files	Easily accessible list of compliance requirements will be listed on a web-based portal with access to key compliance documents centrally posted
Tank Management	Mixed. Tank inventories are typically listed in Excel worksheets with SPCCs managed in Word documents	Listed in a web-based system
Cultural and Historical Resources Management	Cultural resource inventories are typically listed in ICRIMPS or documents	Listed in a web-based system with electronic references to other documents
Hazardous Materials Management	Mixed. Use of Access database	Web-based management of MSDSs, list of chemicals stored, with chemical transactions to prepare year-end SARA reports
Hazardous Waste Management	Use of Access databases and paper-based systems	Web-based system for waste characterizations, waste storage information, manifests and DD1348 electronic creation
Air Management	Excel Spreadsheets	Use of web-based system to list emission sources and track permit action tasks (many of which are data sensitive)
Water Management	Excel spreadsheets and word documents	Use of web-based system to list point sources and track permit action tasks (many of which are

		data sensitive)
Environmental Compliance Training	Mixed. Stand up training, PowerPoint, some Web-based	Access to key environmental training that is appropriately delivered over a web-based application
Green House Gas Emissions Management	Excel spreadsheets	Listing of GHG sources in web-based application that calculates Carbon Equivalents (GHGs) with graphs and charts
PCB Management	Excel spreadsheets	Web-based listing
ODS Management	Excel spreadsheets	Web-based listing
GIS	Limited use, typically by other departments (e.g. facilities)	Web-based map server will be made available

3.2 DHS Management Criteria

Top Management support is needed for successful implementation of ESIS. The sponsors should be able to articulate the value-proposition offered by the ESIS and communicate the expected outcomes envisioned by the implementation of the management system.

Stakeholders and end users who are the anticipated beneficiaries of the software should be involved in the design and deployment process. In participating in the implementation of a solution they support, the chances of success are much greater. As such, functional user groups should be established to make sure that key component requirements are incorporate into the ESIS (with the available resources).

There should also be recognition that there will be opponents to the ESIS, which is common. Good communication will be important to articulate the benefits and limitations of the proposed ESIS.

3.3 DHS Technical Criteria

The anticipated ESIS will use a world-class enterprise-supporting database (Oracle 10g) and software technologies using thin client browsers (Internet Explorer), networked

collaboration technologies (interfaces to Microsoft Outlook Email, Calendaring and SharePoint, standard-based design using .NET or JSP software code.

The specific primary technical requirements are listed as follow:

- Oracle 9 is the current level of the enterprise database that is currently approved for use within DHS. It is expected that Oracle 10g should be approved within the next 8 – 16 months.
- Use of JSP or .NET technologies are the common application languages typically implemented with Oracle database implementations.
- Single-sign-on access to the portal. Users only with credentials to log into the DHS network will have access to the ESIS.

Section 4. Analysis of Alternatives

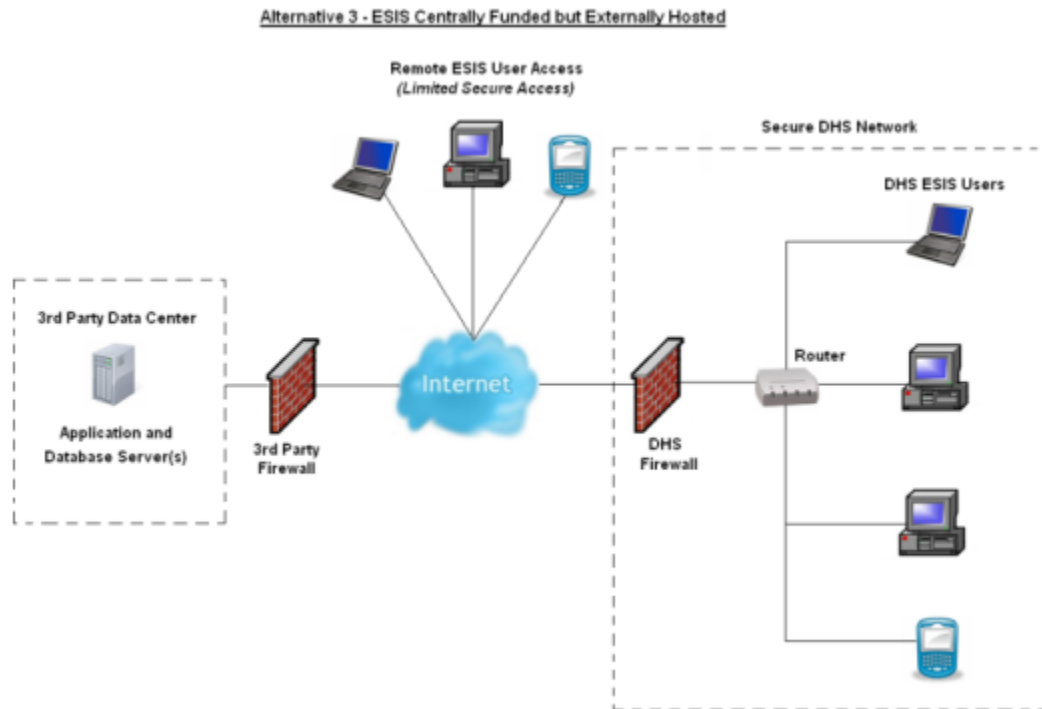
The following is an analysis of alternatives to be considered for recommendation.

4.1 Selection of Alternatives

4.11 Evaluation Criteria and Analytical Approach

In proposing an alternative, the BCA looked at four alternatives which are as follows:

1. Maintain the status quo using a mix of desktop software, paper-based systems and web-based tools hosted internally.
2. ESIS implemented, but not centrally funded, and hosted internally.
3. ESIS implemented and centrally funded, but hosted outside DHS.
4. ESIS implemented and centrally funded, and hosted inside DHS.

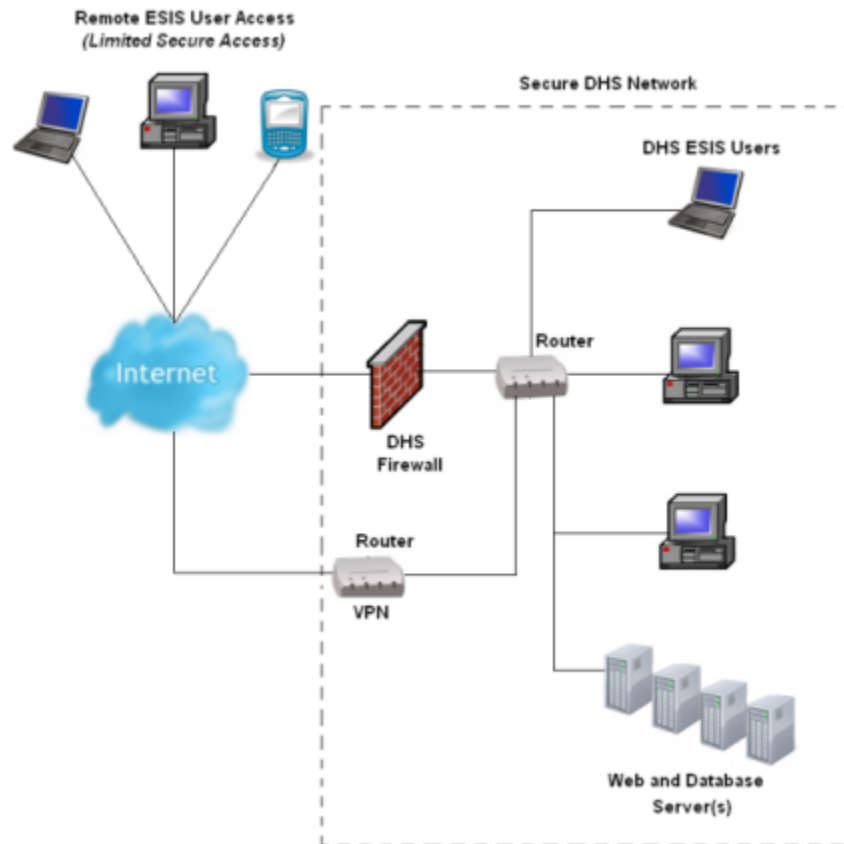


4.12 Evaluation Criteria and Weighting

The following evaluation criteria were used to determine the best alternative:

1. Cost – Refers to how costly is the alternative to deploy and maintain. Desktop systems may be significantly cheaper than an Enterprise system, but these are factors which diminish the utility of desktop software compared with web-based tools.
2. Security Risk – Does the implementation approach lead to a limited amount of security vulnerabilities or presents a large amount of security risk. A good enterprise system hosted on a commercial server could present a high risk.
3. Capabilities – Refers to what value-added capabilities would be added by the selected alternative. An ESIS with tools focused on a number of specific regulatory requirements may be more effective than paper-based systems used for tracking the amount of hazardous chemicals that are in a facility.

Alternative 4 - ESIS Centrally Funded but DHS Hosted



4.13 Analytical Approach

In scoring against the three criteria above a weighted scoring system was used. Since the proposed ESIS stands to provide significant improvements in capability (i.e. more compliance-focused tools for use by components) this criterion is weighted by an additional 50%.

4.14 Scoring Methodology

Scoring system methodology is a straightforward addition of fractions, but also includes a multiplication of the Capability Criteria which is weighted 50% heavier than the Cost and Security Risk criteria.

Analysis of Alternatives - Results

Eval. Criteria:	COST	SECURITY RISK	CAPABILITY	TOTALS	RISK SCORE
Score Key	High=1/Low=5	High=1/Low=5	High=5/Low=1		
Weighting Factor	1	1	1.5		
ALTERNATIVE	Score/Max	Score/Max	Score/Max		
1 – Status Quo (Baseline)	5/5	1/5	1/5	7.5/17.5	43
2 – ESIS Not Centrally Funded, DHS Hosted	3/5	3/5	3/5	10.5/17.5	60
3 – ESIS Centrally Funded, Externally Hosted	1/5	1/5	5/5	9.5/17.5	54
4 – ESIS Centrally Funded, DHS Hosted	1/5	5/5	5/5	13.5/17.5	77
5 – IDEAL System	5/5	5/5	5/5	17.5/17.5	100

It should be noted that a hypothetical 'ideal' system would rank a 5/5 in all categories which would mean that the proposed alternative would be low in cost, high in security and present a number of sustainability and compliance-support capabilities. So Alternative 4 was selected since there is no 'ideal' system with these characteristics.

Section 5. Decision Analysis

The following Decision Analysis lists the four alternatives and provides a brief narrative of pros and cons. More importantly, this system describes what they are and why or why they are not selected using the Analytical Approach described above.

5.1 Alternative 1: Status Quo (Baseline)

Under this approach no ESIS is implemented and the status quo is maintained. In this approach the current mix of system is maintained. Desktop applications in addition to

paper-based, manual approaches are used. There are specific cases where web-based applications are used to manage specific media.

It may come as a surprise that some of these elements involve a larger cost than might have been anticipated at first glance. Some of the single-media-focused web-applications, like the NEPA software, can cost in excess of \$250,000 to implement. Paying a contractor to implement a SharePoint MOSS system to be used across the component can cost over \$50,000.

The United States Navy's EMS Web costs approximately \$300,000 a year to operate.

The contractor estimates that approximately \$550,000 in software expenditure is spent on maintaining the status quo by the components collectively to manage environmental compliance and sustainability.

5.2 Alternative 2: ESIS Not Centrally Funded and Externally Hosted

Under this approach and ESIS will be implemented, but not centrally funded. This alternative assumes that an ESIS is identified and purchased by each component with its own funds.

This is model used by the United States Air Force for its EESOH-MIS enterprise software, where the major Air Force commands are billed on a percentage basis for the overall cost of the software solution.

The problem with this model is that if some of the components do not like the software or feel that it meets the needs of a different component but not theirs, resentment is built up over the cost sharing arrangement.

When the Air Forces EESOH-MIS was going through its growing phases during deployment, Air Combat Command, threatened to stop its payment contributions to the contractor after being sent a bill for what they felt was inadequate progress.

5.3 Alternative 3: ESIS Centrally Funded, Hosted Externally

Under this approach the ESIS is centrally funded by DHS but hosted on a non-DHS server (commercially), which would typically be at a reputable data center (like Rack Space). This approach is increasingly becoming common in the private sector and is called "Cloud Computing" or "Application Service Provider Computing."

In general, Cloud/ASP computing customers do not own the physical infrastructure, instead avoiding capital expenditure by renting usage from a third-party provider. They consume resources as a service and pay only for resources that they use. The majority of

cloud computing infrastructure consists of reliable services delivered through data centers and built on servers.

An application service provider (ASP) is a business that provides computer-based services to customers over a network. Software offered using an ASP model is also sometimes called On-demand software or software as a service (SaaS). The most limited sense of this business is that of providing access to a particular application program (such as customer relationship management) using a standard protocol such as HTTP.

The need for ASPs has evolved from the increasing costs of specialized software that have far exceeded the price range of small to medium sized businesses. As well, the growing complexities of software have led to huge costs in distributing the software to end-users. Through ASPs, the complexities and costs of such software can be cut down. In addition, the issues of upgrading have been eliminated from the end-firm by placing the onus on the ASP to maintain up-to-date services, 24 x 7 technical support, physical and electronic security and in-built support for business continuity and flexible working.

The primary dangers of an ASP module are the many security vulnerabilities presented by hosting DHS component work products on a server outside the department.

5.4 Alternative 4: ESIS Centrally Funded, Hosted on a DHS Server

Under this alternative the ESIS would be funded centrally and hosted on a DHS Server within the DHS network.

In this alternative DHS procures or develops a software application that will form the basis for the ESIS and hosts it inside DHSs network. Although this option is more expensive than maintaining the status quo, this option offers the advantages of high security, in addition to high capability.

5.5 Analysis of Alternatives Conclusion

This Business Case Analysis recommends Alternative 4 (ESIS Centrally Funded and Hosted on a DHS Server).

Section 6. Benefit-Cost Analysis

6.1 Benefit-Cost Analysis Approach

A Benefit-Cost analysis is used in a Business Case to determine the best value solution for a project to support. The Benefit-Cost Analysis assesses each alternative and weighs total cost against total benefits to arrive at the optimum solution.

It should be noted that the analysis process goes beyond cost/benefit by also documenting how each alternative fulfills strategic organization objectives and also assesses the potential impact on stakeholders and end-users.

The decision to invest in any major IT initiative depends on how well the solution meets the needs of the organization. For profit-focused organizations (commercial enterprises), this decision is usually based on how much cash is returned to the organization by the solution and how quickly it is returned. For non-profit organizations, the decision is often made by assessing how much cash is conserved by implementing the solution. In a government organization the benefit-cost analysis goals may fit in between the two options. Regardless, the sponsors of the Business Case or those holding the funding typically need to have a clear understanding of the overall benefits associated with the prospective initiative.

A traditional Cost-Benefit Analysis will include a Net Present Value (NPV) to assess the potential profitability of an investment. NPV represents the difference between the total investment (costs) and the present-day value of the anticipated future annual cash flows (benefits). For the case of this BCA NPV is not presented because of the difficulty in determining the future annual cash flows that would result from this investment as physical products are not being sold. An attempt, however, can be made to look at the cost of compliance fines and other factors that cannot be easily monetized (e.g. time to manage compliance with a predominantly paper based system), and apply it to the analysis.

It is noted, however, that NPV and additional metrics such as Internal Rate of Return (IRR) and Return on Investment (ROI) can be included in this BCA, but there will be several assumptions.

Refer to Section 6.4 for a comprehensive list of potential tangible and intangible benefits to be derived from the implementation of an ESIS.

A benefit-cost matrix is provided below which highlights the pros and cons of each Business Case Analysis Alternative. The matrix also takes risk into account.

OPTION	PROS	CONS
1: Maintain Status Quo (Baseline)	<ul style="list-style-type: none"> • Low Total Cost of Ownership 	<ul style="list-style-type: none"> • Numerous applications • High inefficiencies from doing the same things many times over • Limited sharing of best practices • Uncertain compliance assurance
2: ESIS Not Centrally Funded and Hosted Internally	<ul style="list-style-type: none"> • Web-based • One application • No hardware/software costs • Enhanced Compliance Assurance 	<ul style="list-style-type: none"> • Components need to budget funding • Future funding uncertainty if a particular component is using the software less or more vs. others
3: ESIS Centrally Funded and Hosted Externally	<ul style="list-style-type: none"> • Web-based • One application – low inefficiencies • Pleased components (ESIS funded by DHS) • Reduced Total Cost of Ownership (TCO) • Enhanced Compliance Assurance 	<ul style="list-style-type: none"> • Major security risks. Document and data held on servers outside DHS is potentially a big vulnerability
4: ESIS Centrally Funded and DHS Hosted	<ul style="list-style-type: none"> • Web-based • One application – low inefficiencies • Pleased components (ESIS funded by DHS) • High security • Enhanced Compliance Assurance 	<ul style="list-style-type: none"> • Costs associated with hardware and software maintenance

6.2 Status Quo Pricing

Status Quo Pricing is determined by the cost of maintaining the current desktop software applications in use inside DHS and the current web-based applications used to support specific compliance functions (E.g. CP-Track). This Business Case Analysis estimates this value to be about \$550,000 per year.

Desktop software will usually include an estimate of license fees, server maintenance and backups. Independently acquired software applications used by various DHS components are estimated to total a conservative \$550,000 per year. Examples of these types of tools are the NEPA application used by DHS HQ and EnviroManager Software used by the Coast Guard.

The status quo costs should also include the cost of compliance-related fines that could have been mitigated by the use of a working ESIS. A good example is hazardous waste compliance. If a DHS had a robust compliance-focused Hazardous Waste module in operation, a large fine incurred by one of the components might have been avoided. The authors of this business case do not have concrete information to use this scenario and so it is omitted.

6.3 ESIS Pricing (ESIS Centrally Funded and DHS Hosted)

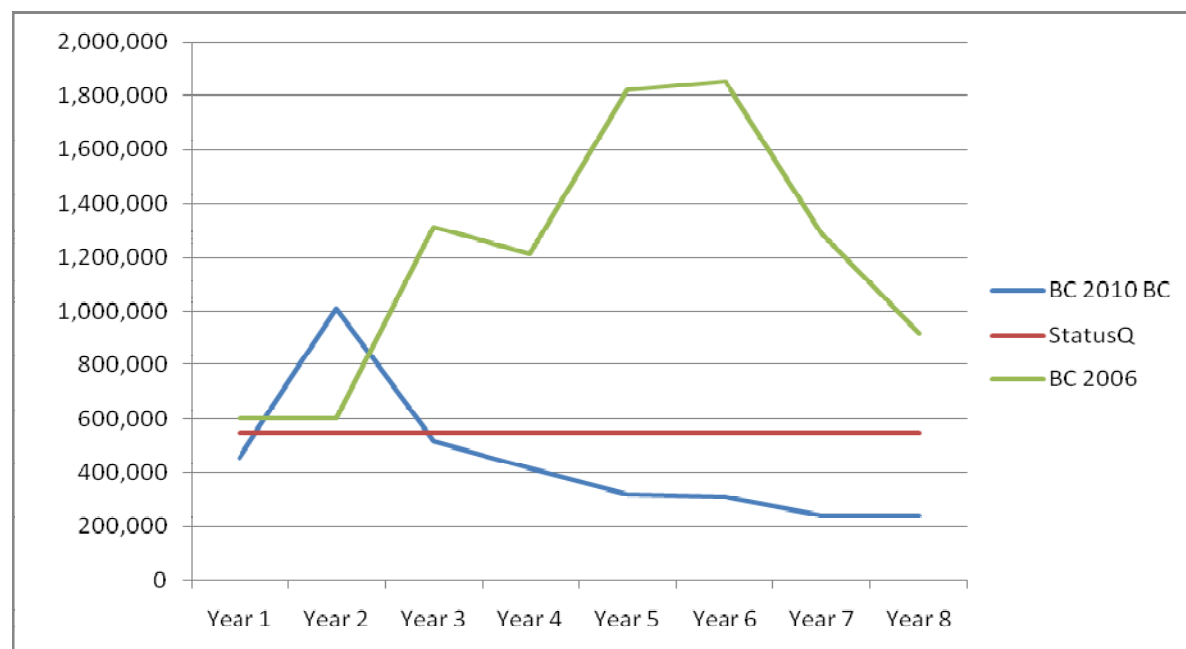
A summary of Estimated Annualized Costs is provided below for three approaches:

BC 2010 – Represents the pricing to implement the tools outlined in [this](#) Business Case Analysis using Alternative 4 (ESIS Centrally Funded and Hosted by DHS).

Status Quo – Is an estimate of what it costs to utilize various software tools in place across DHS today (See Section 6.2 above).

BC 2006 – Represents the estimated pricing to implement an ESIS using the Study carried out in 2006 by the company ICF (note that an inflation factor has not been added to these numbers).

Approach	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Total
BC 2010	458,392	1,009,970	516,780	415,961	318,209	313,029	240,432	240,432	3,513,025
Status Quo	550,000	550,000	550,000	550,000	550,000	550,000	550,000	550,000	4,400,000
BC 2006	600,000	600,000	1,315,370	1,212,870	1,820,870	1,857,870	1,286,245	920,370	9,613,595



Cost details that make up the annualized cost for BC 2010 above are included in Appendix 3.

The costing presented in this BCA are based on total cost of ownership (TCO), which includes ongoing costs over the course of the investment's life cycle (which in this case is 8 years).

6.4 Benefit Estimate

An ESIS centrally funded and hosted by DHS provides the following tangible and intangible benefits:

1. Improves environmental compliance assurance with laws and requirements. A total of sixteen (16) environmental compliance and sustainability-focused tools will be made available to the components.

The ESIS will provide one system to help manage environmental compliance that will lead to reduced risk from errors and omissions when generating required compliance reports.

Using one system with the broad number of compliance tools will facilitate the documentation of compliance and prove due diligence to federal, state and local regulators. A good example will be the use of the Chemical Assurance Matrix in the Hazardous Materials Module which will run through all the chemicals used at a facility or organization and find out which ones trigger various regulatory compliance threshold exceedences. This feature is critical in helping organizations avoid costly fines from regulators.

Users of the ESIS will have the confidence that they are using the most current information or at a minimum will know when a document or piece of data was last modified or updated.

The software will provide simple tools to make sure that required regulatory reports are always up to date. The software will also make responsible persons are made aware through email notifications that a compliance report is due.

2. Improves the management of established sustainability goals. The sustainability module will give DHS the ability to track and report overall environmental performance metrics. Sustainability goals are best tracked when the metrics are transparent and are regularly tracked.
3. A single ESIS will provide a standardized interface for data collection that will lead to consistent outputs. When adding tank information as part of the SPCC compliance management process, for example, all components will add all the key information needed in an identical format. The resulting outputs will be a consistent report format that has all the primary information available for use or viewing by interested parties.

4. Cost Savings – Through economies of scale, cost benefits may be derived from procuring software as a large group than individually. With the single, centralized ESIS there will be the opportunity to eliminate multiple systems that do the same thing. There are many instances where each component manages certain aspects of compliance using similar, but slightly different tools. The problem with this approach is that the cumulative cost of using these different tools is not always recognized when you look at the total cost of compliance which would include IT maintenance, individual software licenses and hardware costs. It should be recognized that even basic desktop software applications can have a costly footprint in a large organization setting.
5. A centrally funded ESIS provides DHS with the ability to incorporate the 'best of class' software features and capabilities that are in use within the federal government, private sector and also within the Department. DHS can go out and use its larger resources to pick and procure the best software solutions in the market place (inside or outside government). DHS can also fund the development of an ideal software solution using internal IT support or use a contractor following a focused requirements analysis/systems specifications process.
6. When purchasing software in large numbers, bigger discounts can be obtained on license fees from volume purchases. Licensing arrangements can also be bulk quoted. If DHS decides to design its own system, however, there would be no per user fees.
7. High information security assurance. An ESIS hosted inside DHS provides the highest level of security. Externally hosted software would lead to key DHS work products hosted outside its protective networks and therefore have the potential for major security vulnerabilities. The alternative recommended selects a centrally funded ESIS hosted inside DHS's network which is the securest solution of the four alternatives.
8. A robust ESIS allows for a simplified way to access real-time information that can be summarized or rolled up in a variety of ways to support high level decision making or to track the performance of established Key Performance Indicators – KPIs. The ability to conduct self-service report generation that aggregates data from multiple sources would decrease the number of requests for information from DHS HQ to the components. Because one database is in use, DHS HQ will have the ability to quickly accessing key component data and information.
9. Using the power of web-enabled technology, the ESIS provides for the ability to easily share and broaden access to environmental compliance and sustainability management information. Web-based in the context of the solution recommended for the DHS ESIS only refers to the technologies used to communicate with the underlying database. Users will use a web-browser to access the DHS ESIS database, but they will only be able to do this while logged into DHS's network. Access from the Internet will be restricted or blocked entirely

The software will also incorporate a dashboard portal homepage that software users can use to customize or personalize their interface with the system based on their needs and organization levels. If a headquarter user is interested in looking at Sustainability charts, for example, the user can select that specific portal (which is a small boxed window of functionality) with that information to show on his/her home page. If a user is only interested in tracking hazardous materials and hazardous waste, the user can select those portals to appear on his/her page. In some instances, the software will know what role a user plays in the organization and present a desktop with appropriate menus and links that the user will be able to customize.

10. Since the software will be centrally hosted within DHSs network, the ability to integrate with existing DHS systems like email (Microsoft Outlook) will be possible. The software, for example, will be able to easily email notifications and ticklers to users that would be accessed by the mailing systems they use on a daily basis. The software will also allow users to delegate tasks and track accountability. There are many instances within the component organizations where environmental management, particularly at field operations or outlying stations, is an ancillary duty. So the ability to task these individuals and electronically check that certain aspects of compliance have been done will be a major advantage.

Since the software will be hosted inside DHS, there may be the opportunity to also connect with and share data with existing DHS legacy systems or other enterprise applications currently in use to support non-environmental functions but that do have useful data to support environmental sustainability and compliance.

11. The specifications for the ESIS will be compatible with current DHS architecture and database requirements (.NET Framework, JSP and Oracle 9 or 10g database)
12. A centrally funded ESIS will provide simple, but effective tools to assist small organizations with non-dedicated environmental staff to better manage environmental compliance with key compliance requirements. The use of the electronic Annual Compliance Planner and Environmental Guides will provide these organizations with important tools to stay in compliance.

The features of the Compliance Planner are also important in sustaining institutional knowledge, particularly in organizations where personnel turnover is high. In using these tools, a user assuming new environmental management responsibilities, for example, will likely have good information about how his/her predecessor managed compliance and sustainability on an annual basis.

13. The implementation of a robust ESIS will minimize organizational environmental risks by giving the component organizations and DHS HQ a better grasp of potential liabilities and associated compliance challenges. In using an ESIS with information stored in a single database, DHS and component organizations will have a complete and current inventory

of all assets that might impact the environment, e.g. regulated tanks, asbestos, or cultural resources.

14. Advantages of one database. This capability allows component operations using the same types of information to enter it once. If a facility within one of the components uses a particular chemical that is commonly used at other organizations within the component, they can share the information and have it entered once. An example of this capability would be the Hazardous Materials MSDS module where there is only a need to enter an MSDS for 'WD-40' once, instead of multiple times.
15. The centrally hosted ESIS will improve access and sharing of 'Best Practices' across DHS components. Where one DHS component is doing an outstanding job managing a certain area of compliance or sustainability, this information can be quickly shared with other components. This sharing enhances environmental awareness, teamwork and personnel involvement. Using an ESIS allows for significant opportunities for improvement can be identified and quickly shared across the DHS enterprise.
16. The centrally hosted ESIS will provide enhanced compliance oversight from the headquarters level. Using the Compliance Audit Module, DHS-HQ, for example, can instantly find out where all the high risk compliance findings are and what their resolution and closure status is.
17. The implementation of an Enterprise ESIS will provide major advantages over using desktop tools. The use of desk top tools may be useful and in many cases have good utility, but they have a major limitation in being inaccessible to a large number of people. An environmental department at headquarters may not have an efficient way of sharing key information with the field that can assist them with compliance.
18. Implementation of an ESIS will significantly improve the speed in getting access to information. On-Demand access to the software will mean that that there will be a reduced need slow physical mail or even emails to multiple sources for the same thing.
19. Software changes in a web-based ESIS (versus) a desktop focused system can be made available across the enterprise instantaneously or overnight. Desktop updates to hundreds of system can be a nightmare, even if they can be pushed out over the network.
20. Software quality assurance is also standardized across the enterprise when using one system.

6.5 Sensitivity Analysis

A sensitivity Analysis is usually conducted to evaluate the assumptions made by the various alternatives or options offered. The analysis is a method that is typically conducted for further evaluating the riskiness of an investment and confirming the assumptions used.

For the case of this Business Case Analysis, the assumptions are clear and unambiguous and so the Sensitivity Analysis conducted is on the Risk Matrix.

Using the Risk Matrix, the consultants evaluated the different results that might come from the changing of the weighting assumptions used to evaluate the benefits of each option. Refer to the chart in Appendix 3. The results were still consistent with the eventual recommendation that Alternative 4 be adopted.

Section 7. Challenges and Risks

The federal government recognizes risk management as a key component to good project management and an important consideration when developing BCAs. It is therefore essential for the proponents of new software initiatives to understand the risks and opportunities involved in the potential investment of the ESIS. This assessment includes a discussion defining the risks, followed by discussion about how the risks will be addressed or mitigated.

Risks in the case of this Business Case are defined as anything that can block or interfere with the successful implementation of the ESIS initiative.

A Risk Assessment is necessary to ensure that the authors of the Business Case have identified potential situations that could adversely impact the successful implementation of the management system.

Risk management is the systematic approach to setting the best course of action to mitigate the risks identified through the process of risk identification, assessment, comprehension of risk, actions to mitigate the risk (risk response), risk monitoring and evaluation.

With this section we will look at the risks and challenges associated with the implementation of an ESIS.

Listed below are Cultural, Technological and Financial Risks that will potentially affect this ESIS and how they can be mitigated during deployment. Many of these shortcomings were discussed in the 2006 recommendation Report and are repeated here.

CULTURAL Challenges and Risk	Possible Mitigation
Lack of end user acceptance and resistance to migration and limited user input to the system	<ul style="list-style-type: none"> • Communication of benefits and policy document to guide mandated and/or optional use of tools • DHS HQ to garner top management support
Difficulty with integrating existing tools	<ul style="list-style-type: none"> • Provide a simple road map to import required work products
Overly complicated system not user friendly for end-users	<ul style="list-style-type: none"> • For end-users, design simple user interfaces that have functionality that is mirrored across applications. • Incorporate different role levels into the design so that users see only what they need to see to manage compliance and sustainability • Good training fosters good adoption. • Simple user manuals
Environmental Managers too busy. Some wear Safety and OH hats	<ul style="list-style-type: none"> • Software should help make life easier should be communicated
Variety of environmental management maturity levels	<ul style="list-style-type: none"> • Conduct Gap Analysis before deployment and customize deployment based on needs

FINANCIAL Challenges and Risk	Possible Mitigation
Schedule delays, cost overruns and delayed implementation	<ul style="list-style-type: none"> • Good planning and the use of a contractor with a proven track record to execute this type of deployment efficiently
Long procurement cycle	<ul style="list-style-type: none"> • Work with procurement and work with DHS POC to assist with the OMB Exhibit 300 Business Case process
Increasing demands on DHS component resources	<ul style="list-style-type: none"> • Itemize DHS resource requirements
Protracted deployment timeline	<ul style="list-style-type: none"> • Conduct rapid deployments
DHS ongoing support resources	<ul style="list-style-type: none"> • Planning

TECHNOLOGY Challenges and Risk	Possible Mitigation
DHS Enterprise architecture issues	<ul style="list-style-type: none"> • Work through them early with IT
IT restrictions	<ul style="list-style-type: none"> • Involve IT in the design and deployment phases
Migrating Legacy Data	<ul style="list-style-type: none"> • Identify these needs ahead of deployment though Gap Analysis checklist

TECHNOLOGY Challenges and Risk	Possible Mitigation
Network Limitations. Web-based apps work at the mercy of network and server load.	<ul style="list-style-type: none"> Work with IT to ensure network availability.
DHS IT not familiar with code	<ul style="list-style-type: none"> Provide clear documentation on the software
Software Scope Creep	<ul style="list-style-type: none"> DHS must set priorities and stick to them.

Management mandated improvements, like this ESIS, involve change. In most organizations there tends to be a resistance to change unless key actions are undertaken to mitigate common issues and the natural inertia that accompanies change management.

Section 8. Conceptual ESIS Operation

8.1 Concept of Operations

The following provides a summary overview of how the ESIS would work within DHS and its components.

8.11 Operational Process Overview

The software modules provided by the ESIS will be offered as either mandatory or optionally used tools. An example of a tool that will be required for use by a component facility, for example, would be the Hazardous Materials Module, if the facility has EPCRA or SARA reporting requirements. That same facility may optionally decide to use the PCB or Asbestos modules if there is a strong perceived need.

Tool/Module	Required Use By	Optional Use By
Sustainability Portal	All Components	
ISO 14001 EMS	All Components with appropriate facilities (EMSs may be site-based or organization-based)	Other Components
Compliance Auditing	All Components	
Compliance Requirements Portal and Guides Management		All Components

Tank Management	All Components that have regulated USTs and ASTs included in SPCCs	Other Components
Cultural and Historical Resources Management	All Components that have Cultural or Historical Resources that require going through CATEX process	Other Components
Hazardous Materials Management	All Components that have EPCRA Tier II and/or TRI reporting requirements	Other Components
Hazardous Waste Management	All Components with RCRA Waste above 1,000 pounds	Other Components
Air Management	All Components that have Title V Reporting	Other Components
Water Management	All Components that have a NPDES or SPDES permit	Other Components
Environmental Compliance Training	All Components for specific training	Other Components
Green House Gas Emissions Management		Available to all Components
PCB Management		Available to all Components
ODS Management		Available to all Components

Provided on the next page is a table describing how the software might be used by the different components of DHS. This scenario is just for example purposes and does not reflect the actual proposed use by the organization during actual implementation.

Example use of the ESIS by DHS HQ, Component HQ, Large Installation and Small Station

Stakeholders/Customers	Description
DHS (HQ)	DHS (HQ) might use the software to manage: <ol style="list-style-type: none"> 1. Manage Sustainability Metrics 2. Compliance Audits 3. Compliance Summary Reports
Component (HQ)	Component (HQ) might use the software to manage/support <ol style="list-style-type: none"> 1. Sustainability Metrics 2. Compliance Audits 3. Compliance Summary Reports
Example: USCG Yard, Baltimore, MD	A large facility might use the software to manage/support <ol style="list-style-type: none"> 1. Compliance Portal Requirements and Guide 2. Manage ISO 14001 EMS 3. Tanks 4. Asbestos 5. HazMat 6. HazWaste 7. Environmental Training
Example: CBP Station in Corpus Christi, TX	A small component facility might use the software to manage/support: <ol style="list-style-type: none"> 1. Annual Compliance Requirements 2. Refer to the Compliance Guide 3. Tanks 4. Environmental Training

8.12 Logistical Process Overview

- Implementation logistics could be a challenge if deployment planning is not conducted properly or if the implementation team is not experienced. A typical rollout will involve a grouping of primary users from a component coming together for training at a central location (could be regional if the component is large). It is anticipated that a certain amount of data and documentation will be pre-loaded into the system prior to training so that the users leave the training with a running start at using the software. There may be some post-loading of legacy data.
- Operational logistics should not play a major role in the ESISs implementation since the software is web-based (although set up within DHSs network). The deployment support

contractor will not need to load several hundred pieces of desktop software files various desktops across the components.

8.2 Standards and Accountability

This section looks at the policies and standards that could impact the implementation of the ESIS.

Tetra Tech met with a senior DHS manager to clarify which policies and standards might be applicable to this type of investment. The IT considerations are included in the table below:

IT-Related Policy and Standard Considerations

Policy/Standard Area	Description
Security	Considerations in this area include: <ol style="list-style-type: none">1. Physical security of hardware2. Physical safety of information3. Restrictions and authorizations of access to information contained in the ESIS4. Authentication and validation of users and their information5. Protection from hacker attacks6. Backup operations7. Compliance with DHS Information Security requirements
Privacy	Considerations in this area include: <ol style="list-style-type: none">1. Privacy safeguards2. Release of classified information
Accessibility	Considerations in this area include: <ol style="list-style-type: none">1. Access to individuals with disabilities2. Access to users without a high speed network connection Release of classified information
Information Management	Considerations in this area include: <ol style="list-style-type: none">1. DHS Policies and Directives on Information Management2. Any applicable standards listed as mandatory requirements under these policy instruments
Enterprise Architecture	Considerations in this area include: <ol style="list-style-type: none">1. How does the planned ESIS support enterprise architecture standards2. Integration with established business practices3. Reuse of common application components already in use

The tools provided with each of the applications will also have to confirm with a number of environmental laws, regulations, Executive Orders (13423) and also standards (ISO 14001).

8.3 Safety and Security

Safety

Physical safety requirements for this type of IT-related project are minimal.

Security

Security requirements for the proposed ESIS are important because of the type of work DHS does. In looking at security-related considerations the proposed implementation of Alternative 4 (ESIS Centrally Funded and Hosted within DHS's network) provides the highest levels of security of the four (4) options considered. The security advantages of Alternative 4 are:

- With the application hosted within DHS's firewall the application will be shielded from viruses, denial of service attacks, hacking and data intrusions.
- With the single-sign on, access to the software will be controlled and provided only to DHS-authorized users. The single sign-on will also facilitate software adoption by not having the user memorize another username and password to access the system.
- Although the application is 'web-based' it does not mean that it will be accessible over the Internet. Rather, internet based technologies will be employed to access and use the application (i.e. users will use a common browser to access the software).
- Security will also be maintained at the component level and also by role based access.
- The implemented ESIS will be developed in compliance with Federal Information Management Security Act (FISMA) and DHS Certification and Accreditation (C&A) requirements.

8.4 Best Practices

In looking at other large management systems that have been implemented successfully within the federal government, the following best practices have been observed:

- Know your user's needs and then train them well on how to use them
- Present an easy-to-use-and-navigate interface
- Get and sustain top management support
- Train with 'real' data and documents. Try to back door import legacy data.
- Prioritize the ramp up to spur adoption and championing.

- Provide a readily available help desk during normal business hours that users can call or email.

8.5 Operational Challenges

Maintenance Operational Challenges will involve continuing to provide the best software to meet environmental compliance and sustainability needs.

The ESIS should avoid some of the challenges presented by scope creep which can doom the system. In this scenario, systems are designed for a specific set of limited purposes. Expanding its capability without proper planning can create an application that is watered down that meets nobodies needs well or one that is too complicated from trying to meet everyone's needs.

As with Implementation logistical challenges, there may be operational challenges if the software is not pre-tested thoroughly with all of its bugs resolved.

8.6 Summary

The ESIS will provide a single, centralized, web-based repository to manage sustainability and environmental compliance.

Section 9 Tactical Next Steps and Implementation

While the Business Case Analysis provides the justification for the establishment of the ESIS, an Implementation Plan (which is part of a follow-on subtask to this assignment) will provide the roadmap for successful deployment of the recommended ESIS using Alternative 4.

In the short term, this BCA will provide the supporting information needed for the OMB Exhibit 300 documentation that will be used to obtain program authorization and funding.

Section 10 Major Implementation Activities and Milestones

Following is a summarized table highlighting the next steps in the ESIS development.

Milestones/Deliverables	Months	Time Frame
1. Business Case Analysis	6	October 2009 – March 2010
2. Implementation Plan	4	January 2010 to April 2010
3. Design	1	May 2010
4. Programming Build/Customize	4	June 2010 to September 2010
5. Fielding – Trial/Bug Fixes	3	October 2010 – December 2010
6. Fielding - Full Deployment	12	January 2011 – December 2011
7. Ongoing Support and Maintenance	12	January 2012 +

Appendix 1 – Glossary

Term	Description
AST	Above Ground Storage Tank
BMP	Best Management Practice
COTS	<p>A COTS (commercial off-the-shelf) product is one that is used "as-is" and commercially made available for sale, lease, or license to the general public. COTS products or technologies are designed to be ready made, easily installed and to interoperate with existing system components. Almost all software bought by the average computer user fits into the COTS category: operating systems, office product suites, word processing, and e-mail programs are among the myriad examples. One of the major advantages of COTS software, which is mass-produced, is its relatively low cost.</p> <p>COTS applications are often used as alternatives to in-house developments or one-off government-funded developments.</p>
DHS	Department of Homeland Security
GOTS	Government off-the-shelf (GOTS) is a term for software and hardware products that are typically developed by the technical staff of the government agency for which it is created. It is sometimes developed by an external entity, but with funding and specification from the agency. Because agencies can directly control all aspects of GOTS products, these are generally preferred for government purposes. GOTS software solutions can normally be shared among Federal agencies without additional cost.
EMS	Environmental Management System
EPA	Environmental Protection Agency
EPAS	Environmental Performance Assessment System
GIS	Geographic Information System
ISO14001	International Organization of Standards focusing on Environmental Management and the systematic approach to continuously improving environmental performance through a Plan, Do, Check, Act cycle.
MOTS	<p>A MOTS (either modified or modifiable off-the-shelf, or military off-the-shelf, depending on the context) product is typically a COTS product whose source code can be modified. The product may be customized by the purchaser, by the vendor, or by another party to meet the requirements of the customer. In the military context, MOTS refers to an off-the-shelf product that is developed or customized by a commercial vendor to respond to specific military requirements. Because a MOTS product is adapted for a specific purpose, it can be purchased and used immediately. However, since MOTS software specifications are written by external sources and sometimes with technologies not currently used by the government, government agencies are sometimes wary of investing in using these tools.</p>
NEPA	National Environmental Policy Act
NOV	Notice of Violation
RCRA	Resource Conservation and Recovery Act

REJ	(Microsoft's) Rapid Economic Justification
SOP	Standard Operating Procedure
TCO	Total Cost of Ownership
TRI	Toxic Release Inventory
UST	Underground Storage Tank
USSS	United States Secret Service

Appendix 2 – Environmental Systems Reviewed

User	Tool	Description
Air Force	EESOH-MIS	Enterprise Environmental Safety and Occupational Health Management Information System (EESOH-MIS) is an Air Force developed and managed software program to manage ESOH requirements.
Army	EPAS	Environmental Performance Assessment System (EPAS) is an Army developed managed program designed primarily to help Garrison Commanders achieve, maintain, and monitor environmental and management performance at their installations.
DHS-HQ	NEPA Portal	Used to manage the NEPA process
DHS – TSA	EMS Web Portal	Paperless document repository. Compliance audit resolution management
DHS - USSS	Fed Center	Is a compliance assistance resource repository used by federal organizations to manage compliance and other requirements.
Marines	EMS Portal	Microsoft SharePoint-based software developed and managed by the United States Marines Corps to manage environmental compliance
NASA	HMMS	Privately owned software used to manage Hazardous Materials and Hazardous Waste. HMMS is also used by other DoD services.
NASA	NEPS and SharePoint	National Aeronautic and Space Administration tool for managing key environmental documents and EMS
Navy	EMS Web	Developed and managed by the U.S. Navy as a document management system for hosting ISO 14001 EMS documents. Also used by the Navy to manage environmental funding requests.
Navy	ECATTS	Privately owned software used primarily by the Navy to manage environmental compliance training.
Postal Service	ESHMS	Environmental Safety and Health Management System used to manage ESOH for the Postal Service
USACE	CP-Track	Initially funded by the USACE this application is used by various federal services, including DHS to manage audits. It includes a dynamic List Builder and features to record and resolve compliance findings.
USCG	Compliance Guides	USCG funded application used to list documented compliance guides in an easily accessible web-based format (used by Coast Guard Stations on the West coast and Pacific areas)
USCG	EnviroManager	Used to manage EMS, HM, HW, Asbestos, Tanks, ECEs, Compliance Training. Some modules have been funded and customized by the USCG. EnviroManager is also used by various Navy, Army and Air Force organizations.

Appendix 3 – Estimated Annualized Costs

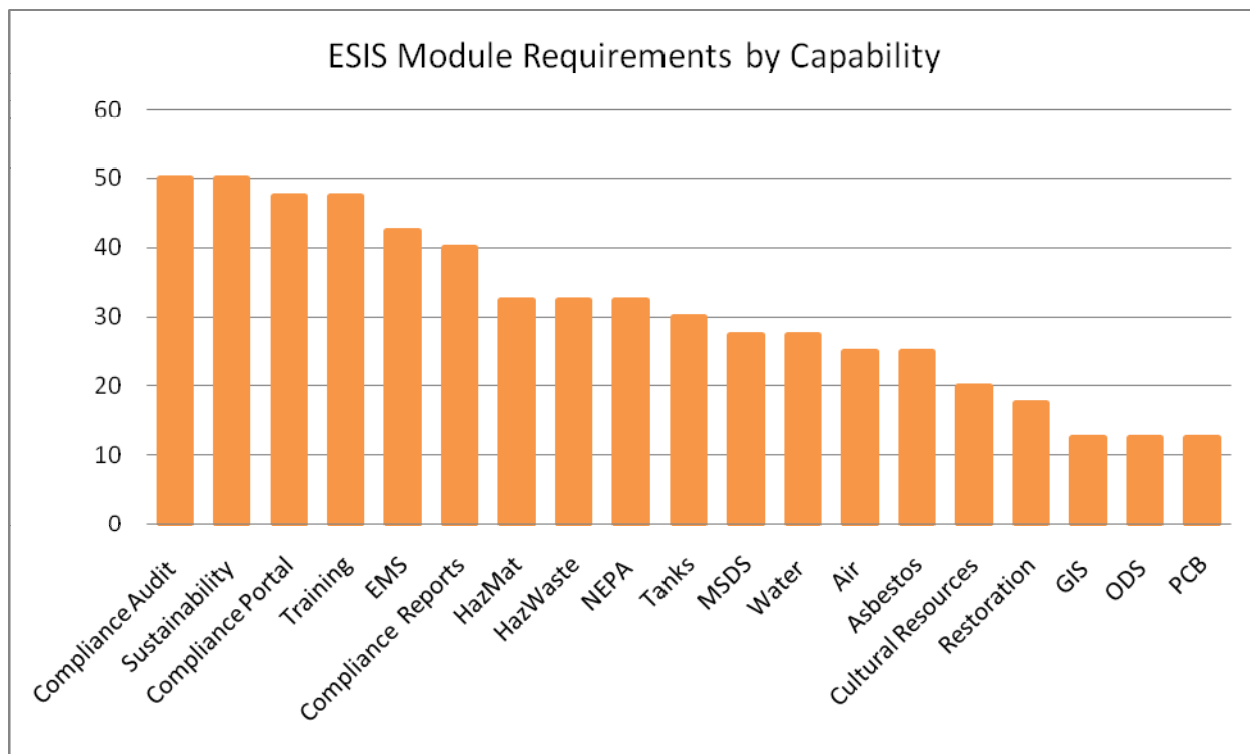
Approach	Year 1	Year 2	Year 3	Year 4	Year 5	Year6	Year 7	Year 8	Total
BC 2010	458,392	1,009,970	516,780	415,961	318,209	313,029	240,432	240,432	3,513,025
Status Quo	550,000	550,000	550,000	550,000	550,000	550,000	550,000	550,000	550,000
BC 2006	600,000	600,000	1,315,370	1,212,870	1,820,870	1,857,870	1,286,245	920,370	9,613,595

Details of the Estimated Annualized Costs highlighted above are derived from the table below.

ESTIMATED ANNUALIZED ESIS COSTS (2010 Business Case Analysis)											
	Mos	Mgr	BA	JS/HD	DBA/App	Trainers	Admin	Total	Travel	ODCs	Total
Design	1	20,010	16,530	0	19,140	0	600	56,280	10,000	8,442	74,722
Build	4	59,800	16,530	0	57,200	0	2,400	135,930	40,000	20,390	196,320
Test	3	20,010	16,530	39,000	57,200	16,530	600	149,870	15,000	22,481	187,351
Deploy	12	119,600	148,200	153,000	171,600	148,200	7,200	747,800	150,000	112,170	1,009,970
Support 1	12	59,800	49,400	117,000	114,400	49,400	7,200	397,200	60,000	59,580	516,780
Support 2	12	59,800	32,870	117,000	114,400	0	7,200	331,270	35,000	49,691	415,961
Support 3	12	39,790	32,870	117,000	57,200	0	3,600	250,460	30,000	37,569	318,029
Support 4	12	39,790	32,870	117,000	57,200	0	3,600	250,460	25,000	37,569	313,029
Support 5	12	20,010	32,870	78,000	57,200	0	3,600	191,680	20,000	28,752	240,432
Support 6	12	20,010	32,870	78,000	57,200	0	3,600	191,680	20,000	28,752	240,432

\$3,513,025

Appendix 4 – ESIS Requirements by Capability



Appendix 5 – Compliance Assurance Matrix

Environmental Protection Agency (EPA) Interdepartment Chart

